



US Army Corps
of Engineers®
Portland District

PINNIPED DETERRENTS AT BONNEVILLE DAM 2005-2006

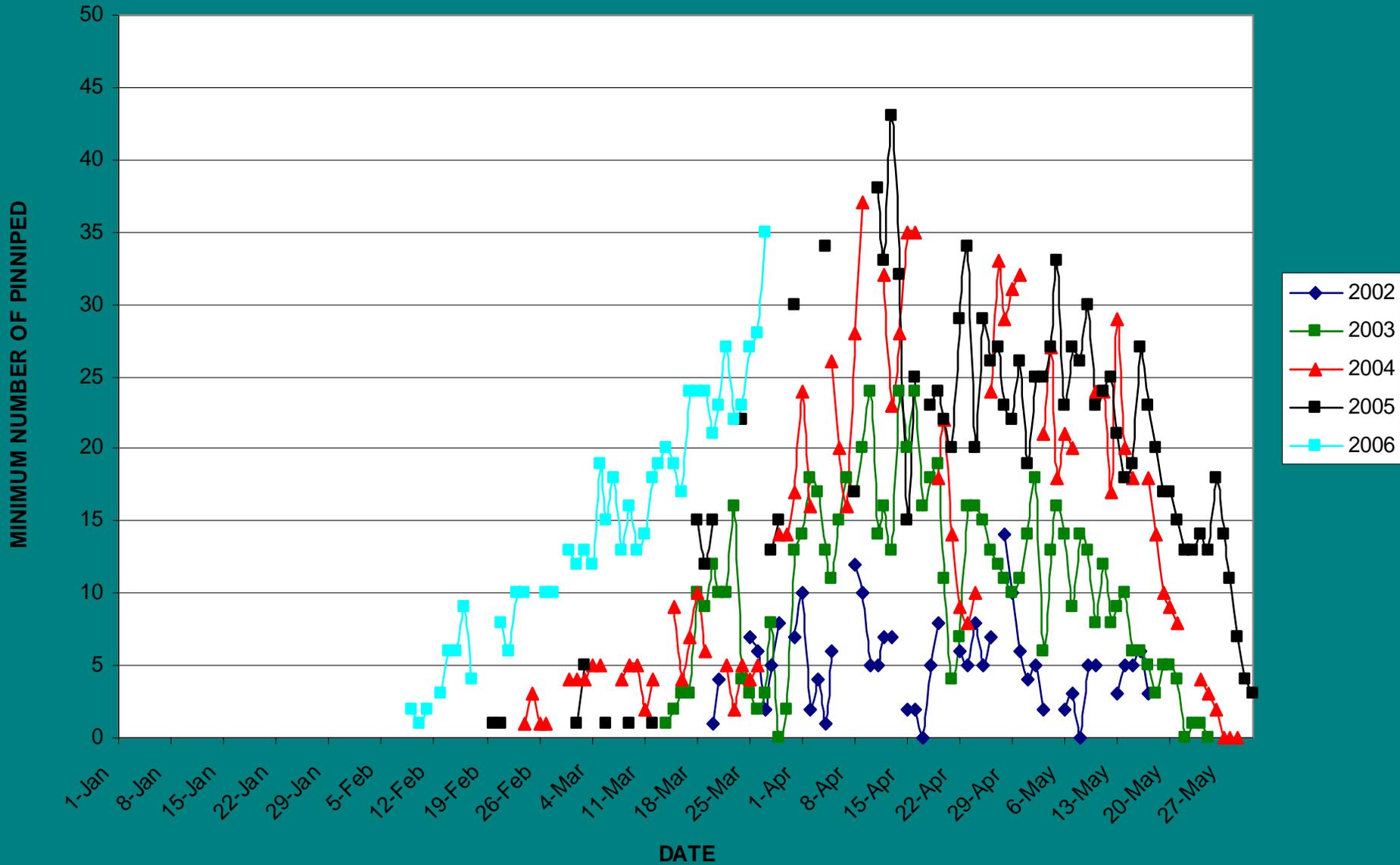
Fisheries Field Unit



GOALS OF STUDY

- Seasonal timing, abundance of Pinnipeds
- Estimate # adult salmonids consumed (and other fish)
- Pinnipeds behavior within/between years
- **Explore methods to deter pinniped presence and predation on salmon**

MINIMUM NUMBER OF PINNIPEDS PRESENT PER DAY AT BONNEVILLE DAM, 2002-2006





**PREDATION
IMPACTS**

AT

BONNEVILLE

DAM

Estimate of the Number and Percent of Salmonids Caught by Pinnipeds at Bonneville Dam from 1 January to 31 May

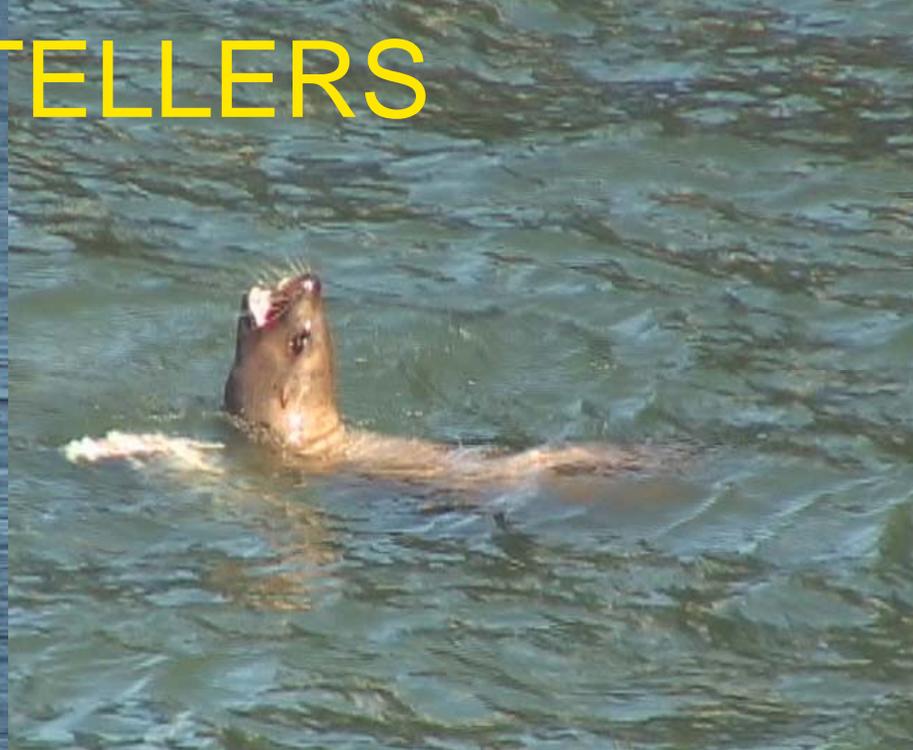
YEAR	TOTAL HOURS OBSERVED	ESTIMATED SALMON CAUGHT	TOTAL SALMONIDS PASSING BONNEVILLE	PERCENT TAKE
2002	734	1,010	284,733	0.4%
2003	1,440	2,329	217,185	1.1%
2004	553	3,533	186,804	1.9%
2005	1,109	2,920+	82,006	3.4%

PREY SPECIES OBSERVED TAKEN FEB 10- MAR 27, 2006

Unknown Salmonid	33
Chinook	34
Steelhead	167
Sturgeon	233
Other	19
Unknown Fish	166



UNPRECEDENTED STURGEON TAKE BY STELLERS



STURGEON OBSERVED TAKEN BY SIZE BELOW BONNEVILLE DAM, FEB 10 - MAR 27, 2006

<u><2'</u>	<u>2-3'</u>	<u>3-4'</u>	<u>4-5'</u>	<u>5-6'</u>	<u>6-7'</u>	<u>>7'</u>	<u>???</u>	<u>SUM</u>
9	36	48	56	25	6	1	52	233

2005 – ENTERED FISHWAYS



ACTION FOR 2006

- Evaluate deterrent actions on abundance and predation:
 1. Exclusion gates
 2. Acoustics
 3. Harassment

DETERRENTS (SLEDS)



- 8 MAIN FISHWAY ENTRANCES
- 12 ENTRANCE OPENINGS
- 24 SECTIONS
- VARY 10'-15' WIDE
- VARY 30-36' HIGH (2 SECTIONS)
- WEIGH OVER 10,000 LBS EACH SECTION
- GAP SPACE 15 3/8"
- GATES TO REMAIN IN PLACE THROUGH MAY
- COST OVER \$1 MILLION





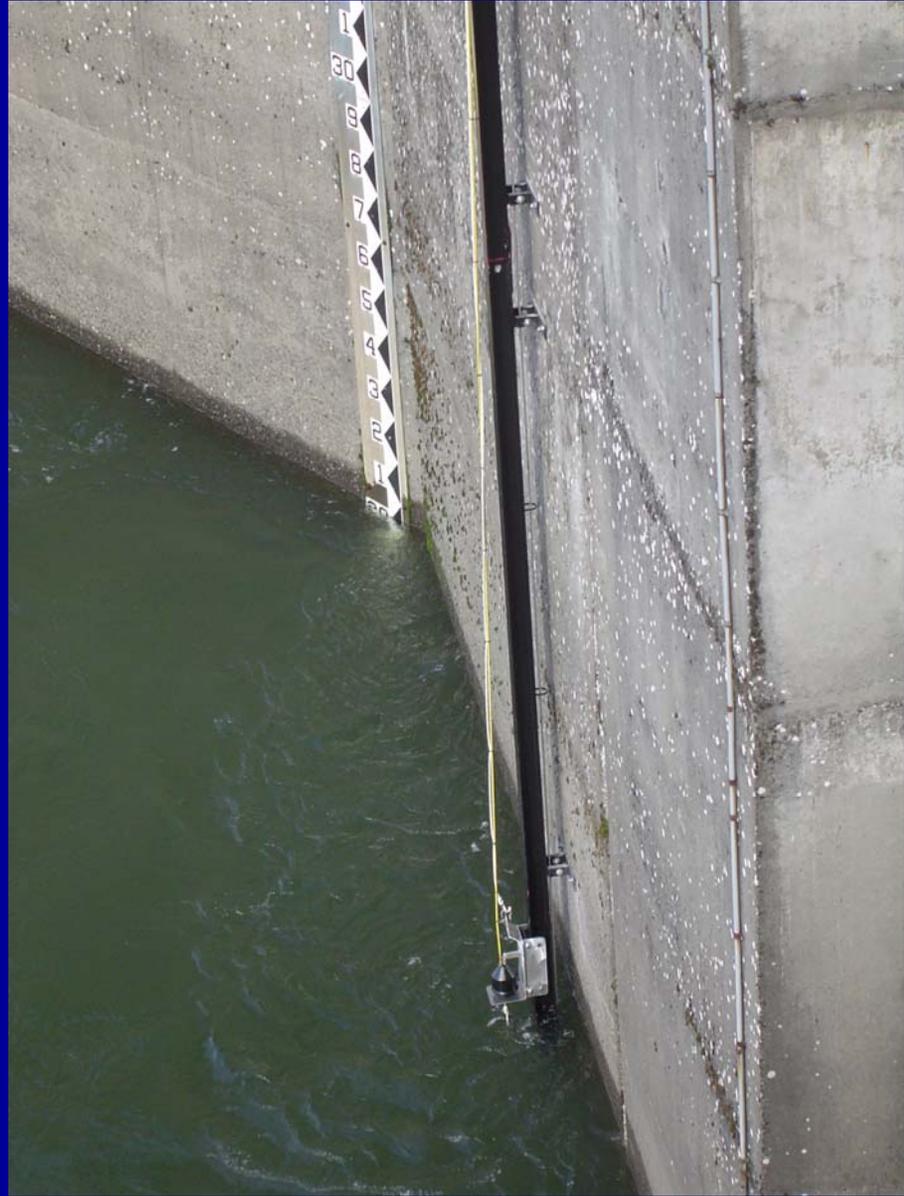
**EARLY IN
SEASON
C404 ABLE
TO PASS
THROUGH
SLEDS**



DETERRENTS (ACOUSTICS)

- Acoustic projectors deployed per each main fishway entrance
(15 kHz, 205 dB range – should have no impact to any fish other than possibly shad – Popper, 2005). U of I to Monitor w/RT Fish







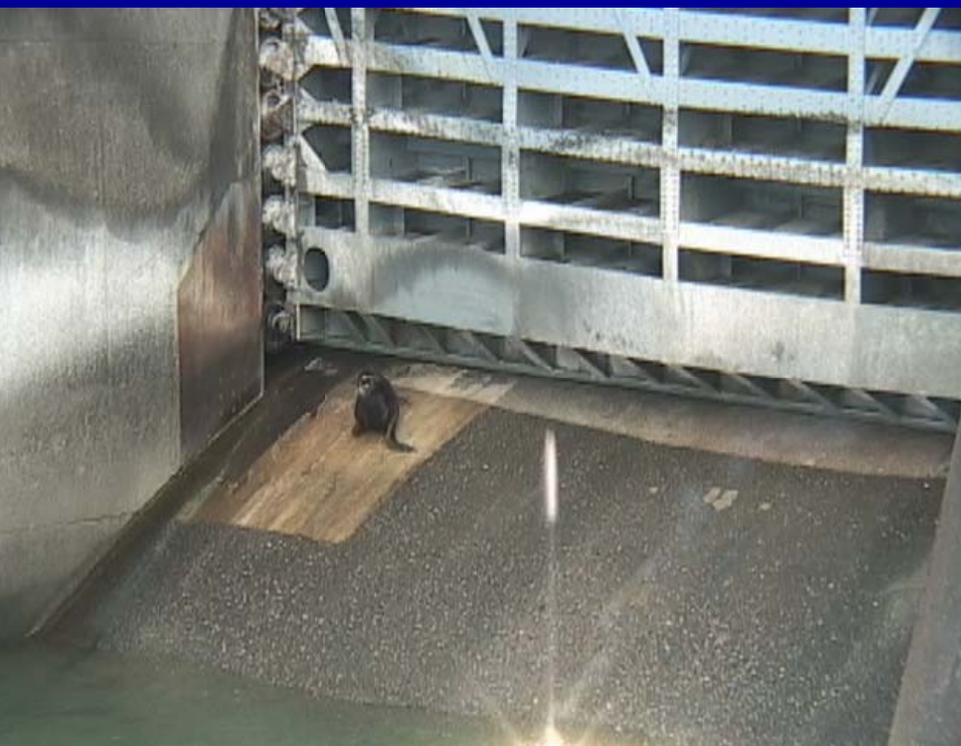


DETERRENTS (HAZING)

- USDA/WS agents to harass using above water pyrotechnics and rubber bullets only, shore-based only, to chase off all haul out sites on project and when within ~100' of fishway entrances.



HAZING OFF HAUL OUT SITES





HAULING OUT IN 2006 NOW INCLUDES STELLERS





- U OF I WILL EVALUATE FISH PASSAGE THROUGH SLEDS WITH 360 RADIO TAGGED SPRING CHINOOK

TEST

(**ABUNDANCE AND PREDATION**)

- DAYS OF **ACOUSTICS ON** AND **ACTIVE HARASSMENT**

VS

- DAYS OF **ACOUSTICS OFF** AND **NO HARASSMENT**

(RANDOM BLOCK DESIGN, 21 REPLICATES, 2 DAYS EACH TREATMENT – 0.05 ALPHA, POWER 80% -

BASED ON 2002-2005 DATA, SHOULD BE ABLE TO DETECT A 50% CHANGE IN DAILY PINNIPED ABUNDANCE AND PREDATION RATES)

RESULTS THROUGH 6 OF 21 BLOCKS

ACOUSTICS AND HAZING	TOTAL PROJECT TAKE	PRESENCE W/IN 100' OF FW	TAKE W/IN 100' OF FW ENTRANCE
ON	82	2163	27
OFF	85	2442	24

ADDITIONAL HAZING EFFORT

- NOAA/ODFW/WDFW
– WILL BE
ACTIVELY HAZING A
COUPLE MILES
BELOW BONN
BEGINNING APRIL
THROUGH END OF
MAY



CURRENT AND FUTURE PURSUITS

- STATES ARE ACTIVELY PURSUING LETHAL TAKE PERMIT FOR NUSANCE ANIMALS (C404).
- TRIBES ARE ACTIVELY PURSUING SUBSISTANCE HUNTING PERMIT FOR SEA LIONS.
- NMFS/ODFW/WDFW/COE ACTIVELY PURSUING POTENTIAL TO TRAP AND HOLD/TRANSFER C404 TO ????

Mmmmm! Salmon!
QUESTIONS?

